APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,597	11/10/2003	Anand Anandakumar	JA03-001	6241

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EXAMINER
CHAUDRY, MUJTABA M

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 09/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/705,597	ANANDAKUMAR, ANAND
	Examiner	Art Unit	
	Mujtaba K. Chaudry	2133	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _27 July 2006_.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-5_ is/are pending in the application.

    4a) Of the above claim(s) _6-39_ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-5_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _10 November 2003_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____.

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _7/21/2004_.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Claims 1-39 were previously restricted. Applicant's election to Group I, claims 1-5 is

acknowledged. Arguments regarding traverse are not persuasive. Primarily, the Examiner would

like to point out that the search and evaluation required for any one set of claims is not

necessarily needed for any other set, and therefore places a burden on the Examiner. Applicant is

reminded to cancel non-elected claims in subsequent communication. Claims 1-5 are considered

on the merits.

Information Disclosure Statement

The references listed in the information disclosure statements (IDS) submitted July 12, 2004

were considered. The submission is in compliance with the provisions of 37 CFR 1.97.

Accordingly, form PTO-1449 is signed and attached hereto.

Oath/Declaration

The Oath filed March 15, 2004 complies with all the requirements set forth in MPEP 602 and

therefore is accepted.

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is

old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR

1.121(d) are required in reply to the Office action to avoid abandonment of the application. The

replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Figure 5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The specification filed November 10, 2003 is accepted.

Claim Rejections - 35 USC § 103

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966),

that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyauchi et al.

(herein after: Miyauchi, USPPN 2003/0106011) further in view of Zeng et al. (herein after:

Zeng, "Design and Implementation of A Turbo Decoder for 3G W-CDMA System",

Published March 11, 2002—Cited in Applicant's IDS).

As per claim 1, Miyauchi substantially teaches a decoder for a communication system

(i.e., Figure 1), the decoder comprising: a first decoder block (i.e., Figure 9, reference number 34

and paragraph 0280-0281) that receives a soft-input information bit for decoding and calculates a

probability estimate for the soft-input information bit; a second decoder block (i.e., Figure 9,

reference number 36 and paragraph 0280-0284) configured to receive and process the probability

estimate of the soft-input information bit; and a decision module adapted to receive the processed

soft-input information and to generate hard-decision output information (i.e., paragraph 0909).
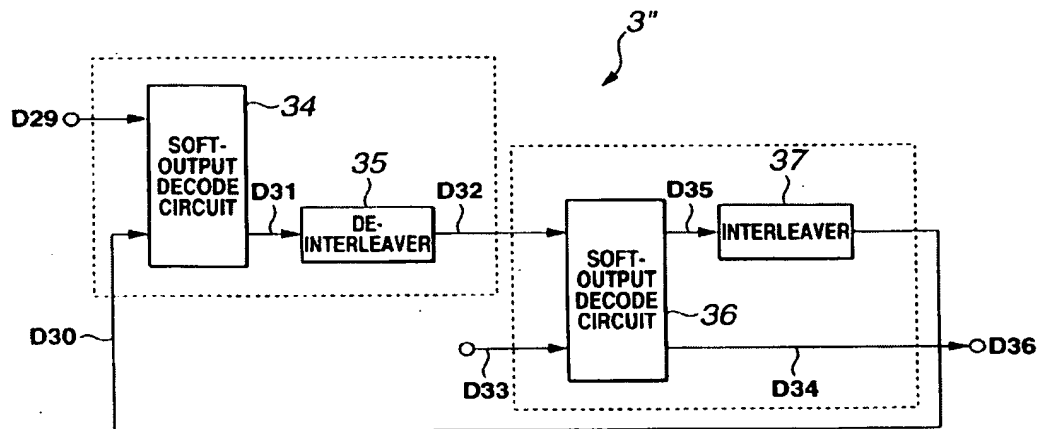
Miyauchi:

FIG.9

Miyauchi does not explicitly teach to perform modulo arithmetic operations as stated in

the present application.

However, Zeng teaches, in an analogous art, (abstract) the design and implementation of

log-MAP turbo decoder used in 3G mobile communication W-CDMA systems. The decoding

algorithm is highly data dominated and needs many memories for data storing. Particularly, Zeng

teaches (i.e., Figure 1 and Page 285) to use perform branch metric calculations for each of the

iterations in the second decoder (Reference 107, Figure 1). The Examiner would like to point out

that branch metric calculations inherently require modulo arithmetic operations. Therefore it

would have been obvious to one of ordinary skill in the art at the time the invention was made to

allow the second decoder of Miyauchi to perform branch metric calculations with arithmetic

operations as suggested by Zeng. This modification would have been obvious to one of ordinary

skill in the art because one of ordinary skill in the art would have recognized that by performing

branch metric calculations in the second decoder would have improved the decoding by reducing the overall memory requirements in the decoding process as indicated by Zeng (abstract).

As per claim 2, Miyauchi substantially teaches, in view of above rejections, (i.e., Figure 9 and Paragraph 0281) the first decoder block includes an output element configured to receive the soft-input information bit and to generate extrinsic information.

As per claim 3, Zeng substantially teaches, in view of above rejections, (i.e., Figure 1) an interleaver configured to interleave the received output extrinsic information, and to direct the interleaved output to the second decoder block.

As per claim 4, Zeng substantially teaches, in view of above rejections, (i.e., Figure 1 and Page 285) the second decoder block includes a state metric calculator configured to calculate backward and forward metric using the soft-input information bit and extrinsic information.

As per claim 5, Zeng substantially teaches, in view of above rejections, (i.e., Figure 1) a de-interleaver configured to de-interleave the output of the second decoder block, and to feed the de-interleaved output back to the first decoder block.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure. Additional pertinent prior arts are included herein for Applicant's review. For

example:

Yoshida et al. teach an encoding apparatus includes a first encoding unit adapted to

encode inputted data, an interleaving unit adapted to interleave the inputted data, and a second

encoding unit adapted to encode an output of the interleaving unit. The encoding apparatus

executes a first encoding algorithm using the first encoding unit, and executes a second encoding

algorithm using the first encoding unit, the interleaving unit and the second encoding unit.

Furthermore, the encoding apparatus shares the first encoding unit when the encoding apparatus

executes the first and second encoding algorithms in parallel.

Maru teaches a turbo-code decoder includes a first reception signal memory, second

reception signal memory, a priori memory, first adder, first selector, and second selector. The

first reception signal memory stores an information sequence. The second reception signal

memory stores first and second parity sequences. The a priori memory stores extrinsic/previous

information in repetitive processing. The first adder adds the information sequence read out

from the first reception signal memory and the previous information read out from the a priori

memory. The first selector selects one of the first and second parity sequences read out from the

second reception signal memory. On the basis of a polarity of a calculation result from the first

adder and that of a selection output from the first selector, the second selector selects one of the

sum from the first adder including a negative polarity, the selection output from the first selector

including a negative polarity, a sum of the sum and selection result, and zero.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mujtaba K. Chaudry whose telephone number is 571-272-3817. The examiner can normally be reached on Mon-Thur 9-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on 571-272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mujtaba Chaudry
Art Unit 2133
September 25, 2006